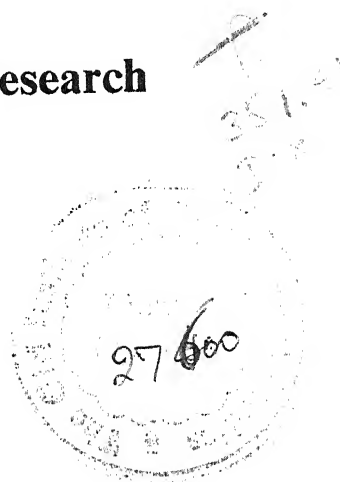


AGRICULTURAL MARKETS OF UTTAR PRADESH

— A SPATIAL ANALYSIS

(ABSTRACT)

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The present write-up presents the summary of the research centered on 'Agricultural Markets of Uttar Pradesh — A Spatial Analysis'. The entire report consists of 12 chapters divided into two major sections : one, General, and two, Spatial analysis of regulated agricultural markets (RAMs) of U.P. The first section is divided into three chapters while the second one comprises nine chapters.

1 PROLOGUE

The first chapter has two fold objective : to present the design of the research work, and to present the glimpses of the study region — U.P. The first part of the chapter discusses the perspectives which give rise of the design of the present research which encompasses twelve aspects : title and the statement of the problem, objective of research, rationale of the study, overview of the existing literature, conceptual background, research hypotheses, coverage in research, data collection, maps and diagrams, methodology, contents of the work, and survey schedules. The second part of the chapter includes the various perspectives which throw light on the geographical personality of the study region, U.P. This part consists of location, and area, physical features, climate, soils, population, vegetation, minerals, agriculture, and transportation perspectives of the state.

2 DEVELOPMENT OF MARKETING GEOGRAPHY IN INDIA

The objective of the second chapter is to present the development of marketing geography in India in terms of production of sources of literature, and progress of contributions to research in this sub-field of geography.

Marketing geography is a new off-shoot from the trunk of geographical science. William Applebaum is regarded as the chief architect of marketing geography in the United States. During the early 1960s, R. E. Murphy laid great emphasis on the fact that marketing geography had come of age. Credit goes to R. J. Bromley for presenting several lists in the form of review and bibliographies on literature of marketing geography during the 1970s. The International Geographical Union (IGU) Working Group on Market Distribution System/Market Place Exchange Systems came into existence in 1972-73. In 1985, E. Gormsen edited the 15th Newsletter of the Working Group which included a bibliography compiled by Wayne Mckin.

In 1984, the IGU Working Group was terminated after 12 years of working and a new unit, Study Group : Geography of Commercial Activities came into being during the France IGU meet. During the next meet in Australia the Study Group was converted into a full-fledged IGU Commission : Geography of Commercial Activities. In 1996, during the IGU meet in the Netherlands, the Commission's term came to an end and a new study group, Globalization of Retailing, has been formed. This study group is now making preparations for submitting its report in the next IGU meet in the year 2000 at Seoul in South Korea.

In the context of the development of marketing geography in India, M. Shafi, in 1972, presented the first list of the literature available in this new subfield of geography. Afterwards H.M. Saxena (1979), J. Singh (1979), R. S. Dixit, and D.N. Verma (1980, 1988), Jayashanker (1984), and R. S. Dixit (1990), more especially, presented their contributions which gave significant details about the available literature produced on marketing geography in the country. The entire lot of material comprises various forms of literature i.e. the research papers, the research projects, the text

book-projects, and text books, the research books and Journals, and the academic meets.

More than 500 research papers have been traced on various perspectives of markets and marketing in geography such as role, origin, evolution, location, distribution, typology, centrality, hierarchy, goods/commodities, trade area, morphology, and synchronization etc. of market centres. It has been observed that a large number of papers dealt with a few particular topics like distribution while only a few papers dealt with a large number of topics. The transport network, typology, morphology, especially, have attracted only a few scholars. And yet, it is obvious that there has been a tremendous increase in the number of studies in the form of research papers, especially during the 1980s, and the 1990s in the country.

Research projects have added a lot in the context of development of marketing geography in India. There are two types of research projects : one, the dissertations which are related to the award of a university degree like M.A., M. Phil, and Ph.D./D.Phil; and the other one, not related to any such awards and these are generally, the post doctoral projects sponsored by the governmental/non-governmental agencies. While more than three-and-a half dozens of the first type of reports have been submitted to various universities in the area of marketing geography in the country; about one-and-a half dozens of the second type of reports have also been completed. In this case, also, tremendous development has taken place during the 1980s and the 1990s.

As far as it is related to the development of marketing geography in form of production of the text-book-project reports and the publication of text books, however, only H. M. Saxena, R. S. Dixit and V. K. Srivastava have made attempts and only one text-book-

project report, and two text books could be seen, these also particularly during the present decade only.

In case of the production of research books, the author has observed that at least two dozens of such works have come out, particularly during the 1980s. It has been noted that marketing geography has been perceived from micro-level study cases to macro-level studies in the country. The case studies of places/towns/ markets have been presented by A. Sami (1980), and R. S. Dixit (1992); while the country level works have been contributed by Johnson (1965), Wanmali (1983), and Dixit (1990). At the regional/state level, Dixit (1984), Saxena (1992), and Jain (1993) made significant presentations. In addition, one research journal on marketing geography has also been started (from Gorakhpur) although it is too irregular about publications of its issues.

The academic meets on discussions and sharing of views on the perspectives of marketing geography during various seminars, workshop, conferences at the local, regional, national, and the international level played a great role in the development of market geography in the country as many of the proceedings are published. It has been observed that more than 200 research studies in market geography have been discussed during these meets.

The entire statistics make it crystal clear that during the 1970s, 1980s, and the 1990s, broadly speaking, from every stand point, there has been a considerable development in marketing geography in the country. The geography scholars in the country have shown keen interest in carrying out researches on various perspectives of market geography in India. It is a good sign that the numbers of both the researches and the researchers have been considerably increasing, especially, during the 1980s, and the 1990s. Besides, in

several Indian universities, marketing geography has been included in the programmes for post-graduate studies as a special paper. Also, M. Phil./ D.Phil./ Ph.D. degree scholars are engaged in this area of geography in considerable number in the country. Thus, there are sound bases to understand that, by this time, in India, marketing geography has achieved the status of a branch of its parent discipline, and it can be safely remarked that, basically, the formative stage has been achieved by market geography in India, and with the continued research work, its literature is being enriched constantly. Market geography, thus, is passing through the informative stage (after completing the formative stage), while the conformative and the reformative stages, a matter of constant multi-dimensional work and process, have, rather, still to come.

3 MARKET REGULATION AND REGULATED AGRICULTURAL MARKETS (RAMs)

This chapter is centered over the presentation of background of market regulation, market regulation in India, the incoming of RAMs, in U.P., the Mandi Parishad, Mandi Samiti, new sites of the RAMs, facilities provided to the functionaries, commodity coverage, crop arrivals, and income of the RAMs in U.P.

The conditions of marketing of agricultural produce prevailing before the regulation in the country had been too unfair and unfavourable to farmers and rather they favoured the traders/intermediaries and, hence, the real benefit of the marketing of agricultural produce of the farmer went, obviously, not to the producer of the produce, rather to the intermediaries. There were numerous mal-practices in the traditional/conventional agricultural markets/mandies, to mention a few : weighment done by weighmen — the men of traders — used substandard and false weights directly cheating the farmers, deductions from sold produce were made in the name of samples,

impurities, substandard produce, contributions for religious activities etc; 'cover bids' keeping the seller in dark, and disputes, if any, were settled by influential persons (from trader's side only), as also no full payments were done immediately after sale etc. And hence, there was a great need to regulate the entire process of sale-purchase of agricultural produce. This gave rise to market regulation under which the open auction of various salable agricultural produce is done after proper cleaning and grading at the same market. The sale takes place only with the wishes of the farmer. The standard weights are used, and no deductions in the produce are made. Thus, the regulation ensures justice to the farmer.

The first regulated market was established as early as 1886 as per the Hyderabad Residency Order. Likewise, various Acts came into being since 1917 till 1935. In 1935, every province (state) of the country came to have Agricultural Marketing Department. Before independence, about 122 markets were regulated while till the 1980s, more than 6000 markets came under regulation in the country.

As regard the market regulation in U.P., it is significant to mention that there has been a permanent post of an Assistant Marketing Officer at the State Headquarters since 1937 only. Under the Agricultural Produce — Classification (and Identification) Act, 1937, the agricultural produce were classified and standardized. The Rajya Krishi Utpadan Mandi Adhiniyam, (UPRKUMA) 1964 provides various measures to regulate the markets in U.P. to achieve various objectives like : to reduce the multiple trade charges, levies and extractions from the producer-seller produce, to provide for the verification of accurate weights and scales, and see that the producer-seller is not denied his legitimate due, to provide amenities to produce-seller in the market, to arrange for the better storage facilities, to provide for the settlement of disputes relating to the

sale of agricultural produce, to make adequate arrangements for market intelligence, with a view to informing the agricultural producer with the latest position in respect of market dealing with his produce etc.

To ensure the fulfilment of the objective of the UPRKUMA 1964, the work of establishment of the regulated markets in U.P. started from 1965-66. There were only two such markets during 1965-66. The number of such markets enhanced with every year upto the 1990. During 1970-71, there were 90 RAMs in U.P. while the number rose to 252 during 1980-81, and during the year 1989-90, the total went to a figure, 262. In January 1997, there were 263 such markets while the sub-mandies number, at present is 381. Thus, there has been a constant growth in establishment and maintenance of RAMs in U.P.

One market committee (Mandi Samiti) is constituted for each market which has a notified area comprising of villages which bring agricultural produce to the market. As per the 1997 records, there are 102 commodities in the Schedule brought under regulation by the state government. The notified area is the jurisdictional limit of a particular market. Each market committee has some responsibilities and duties such as : to ensure from dealings between the sellers and buyers of agricultural produce, to grade and classify and standardize the salable produce and auction the same, to get farmers receive the cost of their sold produce, to provide solution to disputes between farmers and traders due to differences in opinion, to acquire land for construction of mandi — market site — and to develop the same with various facilities for the buyers and sellers. The market committees are expected to be self-supporting bodies. These bodies charge market fee on the sale of commodities in the market as also they collect license fee from the traders and commission agents. During 1973, UPRKUM Parishad has been

established to supervise the developmental plans, control and issue directions relating to the functioning of market committees. The Mandi Parishad of U.P. has prepared various plans for construction of mandis, modern facilities at mandis, sub-mandis, fruit and vegetable mandis, rural hats, village roads and culverts and rural godowns etc. for multi-dimensional development of the villages and the villagers — the farmers — the producers of agricultural produce. The available statistics about such constructions completed, under completion process, and proposals for construction show quite encouraging and satisfactory picture in favour of farmers. It has been observed that there has been a tremendous increase in the arrivals of agricultural produce at mandis as also in the mandi income too, meaning thereby that the farmers have been benefited through the regulation of marketing and they are availing the facilities more and more.

4 DISTRIBUTION

The distributional perspectives of the RAMs of the state have been analysed with the help of various statistical and cartographic methods. The theoretical distribution of RAMs has been examined in various 63 districts of U.P. in terms of area, population, and inhabited villages. The spatial patterns have been examined in the light of Near Neighbour Analysis. In addition, various factors have been put on exhaustive exercises to reveal the exact extent of impact on RAMs in U.P. in terms of coefficient of correlation.

The general distribution analysis includes the actual numerical distribution and the testing of significant difference, if any, in the distribution of RAMs in 63 districts of U.P. The analysis reveals that there are 10 districts with one RAM each, 7 with two, 12 with three, 8 with four, 7 with five, 7 with six, 7 with seven, and 3 districts with 8 RAMs each in the state. However, there is only one district, with 9

such markets. There are 19 per cent districts of U.P. which are three market -districts while 15 per cent districts have just one market each. Only 1.6 per cent districts have the highest, and the second highest numbers of markets i.e., 11 and 9. The chi-square test unfolds that at the levels of 0.01, and 0.02, the hypothesis, there is no significant difference between the observed and the expected frequencies of markets in 63 districts of U.P., stands unrejected while at 0.05 and 1.00, levels it is rejected and that an alternate hypothesis is accepted in each case.

The theoretical distribution has been examined in four ways — the general districtwise numerical distribution, the distribution in terms of area, population, and number of inhabited villages of districts. The general numerical distribution when analysed, revealed that only Nainital and Bullandshahr have $\bar{X} + 3\sigma$ value while 10 districts have $\bar{X} + 2\sigma$, 14 have $\bar{X} + 1\sigma$, 27 have $\bar{X} - 1\sigma$, and 10 have $\bar{X} - 2\sigma$ values meaning thereby that the $\bar{X} - 1\sigma$ is the biggest class against the $\bar{X} + 3\sigma$ which is the smallest one.

The distribution of RAMs against district-area analysis shows that three districts have RAMs with $\bar{X} + 3\sigma$ value, six districts have $\bar{X} + 2\sigma$, 23 districts with $\bar{X} + 1\sigma$, 6 with \bar{X} , 15 with $\bar{X} - 1\sigma$, and 10 with $\bar{X} - 2\sigma$ values. It is significant to note that as many as 6 districts have RAMs equal to the \bar{X} for the state. When the distribution trends were examined in view of population of various districts, the values were : $\bar{X} + 3\sigma$ for 3 districts (Nainital, Jalaun, Hamirpur), $\bar{X} + 2\sigma$ for 5, $\bar{X} + 1\sigma$ for 14, \bar{X} for 22, $\bar{X} - 1\sigma$ for 15, and $\bar{X} - 2\sigma$ for 4 districts (Kanpur Nagar, Basti, Gorakhpur, Azamgarh). This clearly shows that population has great significance in the distribution of RAMs as there are as many as 22, the highest number of districts in this distribution, showing the \bar{X} value. From the standpoint of the number of inhabited villages in the districts, it has been observed that the

largest number of districts, 25, have $\bar{X} - 1\sigma$, 18 have $\bar{X} + 1\sigma$, 6 have $\bar{X} + 2\sigma$, 5 have $\bar{X} + 3\sigma$, and 7 have $\bar{X} - 2\sigma$ values of distribution. Raebareli and Lalitpur, however, have the \bar{X} value in this context.

As far as it is related to the density of RAMs per 1000 km² in the districts of U.P., two districts (Saharanpur, Bullandshahr) have the highest ones (with 2.3, and 2.4 RAMs respectively). This class has been designated as the very high density class. There are three districts (Muzaffarnagar, Firozabad, Agra) in the high density class, while the medium, low and very low classes have 25, 19, and 14 districts respectively. Thus, the medium density class is the largest one followed by the low and very low density classes. The minimum density of 0.1 RAM for 1000 km² has been observed in Uttarkashi, Chamoli, and Pithoragarh districts. The minimum density class has districts from hill region, and the southern plateau region in addition to Basti, and Deoria of the plain region of the state.

The analysis of the locational patterns of the RAMs of various districts of U.P. examined through the Near Neighbour Analysis technique shows that there are absolutely no districts with absolute clustered/regular patterns. However, Muzaffarnagar does have the random pattern. The most of the districts, 46, have patterns in between Random and Regular. Only 6 districts have patterns between Random and Clustered. It is important to mention that 10 districts of the total of 63 districts of U.P. have not been included in the analysis as these districts have only one market each.

To examine the extent of impact of particular factors/variables on distribution of RAMs in various districts of U.P., five are to be mentioned which have been tested statistically. The individual effects of number of villages, area, population, road-length, and marketable surplus in the distribution of RAMs in various districts have gone to the extents : 0.1149, 0.1368, 0.2955, 0.3375, and

0.4635 respectively revealing that the marketable surplus has affected the distribution most followed by road-length, and population. However, the number of inhabited villages, and the areas of districts have little say in this reference.

5 TYPOLOGY

In the spatial analysis of markets, the taxonomical approach is, generally, deemed necessary as the markets have several characteristics which affect their personality and ultimately affecting the centrality, hierarchy, and trade area too. In view of this, this aspect has been taken up by the scholar. It has been noted that the typological studies centered on RAMs have hardly been presented. Hence, in case of the largest state of the country, this endeavour is in hand.

Although no statistical techniques have been employed to explore and develop the typology, in-depth and archival studies and exhaustive exercises have, undoubtedly, been done for the purpose. A specific 'function' on typologies has been developed by the scholar keeping in view the multiple internal characteristics of markets. Some of the such valuable characteristics are : Nature of site, modern facilities, sub-yards, periodicity, openings, closing days, nature of settlement, population, road-length, market fee, volume of crop arrivals during a year, and marketed surplus. Thus, the typology has come up as a twelve step discussion.

The typology based on nature of market site reveals two major types : RAMs with new sites and those without new sites. There are 162 RAMs located in 52 districts which have got new premises constructed on planned layouts with basic facilities for all functionaries especially, farmers. On the other, hand 100 RAMs located in 45 districts are still held at the traditional old sites. The

percentages of the RAMs with new and traditional sites are 61.83, and 38.17 respectively. The major types have been further divided into 5 sub-types.

The typology based on modern facilities takes into account the two major types of facilities — grading unit, and Kisan Bazar — available at the market sites. There are only 52 RAMs spreading over 26 districts having the facility of grading units, 68 RAMs of 35 districts have the Kisan Bazar facility. Only 31 markets of 17 districts have the both facilities together while 173 of 262 RAMs have absolutely no any such facilities at all. The percentages, respectively are : 19.84, 25.95, 11.83, and 66.03. This typology has further been divided into 5 sub-types.

The typology based on sub-yards takes into account the conditions of sub-yards. There are again two major types on this basis — RAMs with new sites, and those without new sites. There are 381 sub-yards in all in the state attached with the main or the primary markets. Out of these only 67 subyards located in 36 districts have the privilege of new market sites. In terms of percentage, they are only 17.58. The sub-yards still with old or ordinary sites, not developed on planned layouts, are 314 in number which share as high as 82.42 per cent. These are located in 56 districts of the state. The new sites and ordinary sites of the sub-yards have been further divided into three, and eight sub-types respectively.

The typology based on periodicity of the RAMs has two main classes : periodic and daily. While there are 257 daily RAMs out of 250 with 97.30 as percentage, the periodic markets are only 7 with only 2.70 per cent. It is, however, important to mention that 3 markets of Uttarkashi, Tehri Garhwal, and Chamoli districts have not been taken into account as these have not yet started functioning under regulation.

The non-daily RAMs have been sub-divided into three sub-types while the daily RAMs have been divided further into eleven sub-types.

On the basis of total number of weekly market openings, the RAMs have been classified into five main classes : those with a very low number of openings i.e., upto 12 only; those with low number of opening ranging from 12 to 24; the RAMs with medium openings ranging between 24 and 36; those markets with high number of openings ranging from 36 - 48; and those with very high number of weekly openings i.e., more than 48. The medium class has the highest number of RAMs 84, followed by the low and high classes together which account for 66 markets each. The very low and the very high classes have 21 and 20 RAMs respectively. In terms of percentages, the figures for the RAMs under various classes are : 8.80 (Very Low), 25.38 (Low), 32.30 (Medium), 25.38 (High), and 8.14 (Very High).

As against the weekly openings, the weekly closings have also been considered for typology. On the basis of this, the seven types for seven days — Sunday through Saturday — have been presented. The percentages of closings on these seven days are : 30.77, 14.72; 9.11, 12.27; 10.86; 10.86; and 6.41 respectively. This shows that Sunday is the most favoured day for closing. It is followed by Monday, Wednesday and Thursday/Friday (together). However, the Tuesdays and the Saturdays are the least favoured days for closing.

6 TYPOLOGY (... CONTINUED)

The typology based on nature of the market settlements takes into account the 7 various settlement types from urban area to village. There are 25 RAMs located in 22 districts of the urban area type, 148 RAMs located in 57 districts of the municipal board type, 59

RAM of 35 districts at the level of town area, and 27 RAMs of 18 districts at the level of village. However, there is just one RAM each of municipal corporation, cantonment area, and notified area types. The urban area, municipal board, town area, and village type RAMs have their percentage 9.54, 56.49, 22.51, and 10.30 respectively while one market each of the remaining three types have 0.39 per cent each.

The 262 RAMs of the state have been classified on the basis of population — a very common criterion — too. There are 5 types under this typology : The RAMs having a population upto 10,000; markets with 10,000 to 20,000, markets with 20,000 to 50,000; the markets with 50,000 to 1 lakh, and the markets having a population more than one lakh. These 5 types have RAMs as 49, 58, 79, 38, and 58 while their respective percentages are 18.74, 22.12, 30.14, 14.50, and 14.50.

The typology — the ninth one is based on the crop arrival related market fee. Actually, this is the classification which has been presented by the Mandi Parishad itself. It takes into account the normal market fee collected from crop arrivals at various markets of the state. These RAMs have been divided into four types — A Special Class, A Class, B Class, and C Class. The annual collection of market fee upto Rs. 20 lakhs gives a RAM the C class, Rs. 20 lakh to 40 lakh collection gives a market a B class status while Rs. 40 lakh to 80 lakh is the range for the A class status and more than Rs. 80 lakh collection annually from market fee is the basis to give a market the A Special class status. The number of RAMs under each type (with their respective percentages) are : 33 (13.60), 33 (13.60), 74 (28.24), and 122 (46.56).

The typology has also been presented on the basis of road-length per 100 km² area of various districts of U.P. The road-length has a great significance in marketing process. There are 5 classes : upto 15 km., 15 - 30 km., 30 - 45 km. 45 - 60 km. and more than 60 km. as very low, low, medium, high and very high, road-lengths in various districts. The 40.85 per cent of the RAMs located in 23 districts have the largest share of road-length in U.P. Thus, the medium class stands the first in this case, followed by the high road-length class with 33.59 per cent of the total markets located in 20 districts of U.P. The third largest class is the very high road-length class which has 16.79 per cent markets. The very low road-length class has the minimum per cent of markets i.e., 1.14 only which follows the second smallest, the low road-length class with 7.63 per cent of the RAMs of the state.

Marketed Surplus is another important internal characteristic of market. More the market surplus, bigger the market and vice-versa. Hence, on this basis also the types of markets have been presented. The volume of annual marketable surplus has been divided into 5 classes (thousand metric tonnes) — upto 50 , 50 - 100 , 100 - 150 , 150 - 200, and more than 200. Observations reveal that 28 per cent RAMs fall in the first class which has 22 districts. It is followed by the last class of the series with 21 per cent (i.e. 10 districts), further followed by the second class with 20 per cent of markets and with 12 of the districts. The middle class i.e. the third class measuring 100 - 150 thousand metric tonnes of marketable surplus is found in 7 districts. This class follows the fourth one which has a share of 19 per cent markets in 7 districts of the state.

Crop arrival in the market is one of the most important characteristic features of a RAM. This is also a parameter which is taken into account while deciding the total personality of a market. Hence, this

consideration has also been taken into account while discussing typology and in this case the average annual total arrivals have been considered. Five classes, just like the marketed surplus have been presented (thousand metric tonnes): upto 50, 50 - 100, 100 - 150, 150 - 200, and more than 200. The analysis shows that the largest number of markets, 123 (47.70 per cent) located in 48 districts have the smallest class. There are 72 markets (28.65 per cent) located in 42 districts, fourth in order of volume classes, is the one which has the smallest number of districts, just 10, which also has the smallest number of markets, just 12, contributing to this extent of volume of crop arrivals in the state. The biggest volume class i.e. more than 200 thousand metric tonnes class, has 30 markets (11.52 per cent) located in 20 districts.

7 HIERARCHY

The nodes on the surface have a size-system. Various terms like hamlet, village, town city, and metropolis have been used in the analysis of settlements. Some principles like $K = 3$, $K = 4$, $K = 7$ have also been suggested in this context. There has been a characteristic absence of hierarchical study of RAMs. Hence, this perspective has been taken up for the study.

A rigorous exercise has been done to evolve a methodology as a base for identifying the hierarchical orders of the RAMs of the state. Eight major causative factors independently affecting the absolute size of RAMs have been taken into account. These factors are those which leave impact on the personality of RAMs. These are : Nature of market site, existence of modern facilities, number and nature of attached sub-yards, periodicity, market settlement population, road-length, market fee, and the volume of crop arrival in the market. A weightage scheme has been prepared and appropriate weights have

been allotted to various forms of the above parameters subject to the maximum weight to the most effective form being one. Thus, in all, each market has got some points out of eight. It has been converted into a Composite Index by multiplying it by 100. Thus, the Composite Index value stands out of 100. After getting the C I value of all the 262 RAMs of the state, the plotting of all of these C I values has been done on a graph sheet to present a scatter diagram. It was noted that there emerge three tiers : The biggest constellations of points (with low C I values) lies in between the C I values 30 and 50. Another group, rather smaller in number of points, is distinctly seen between a level above 50 and upto 75, and yet another, although the smallest group of points, having the high C I values lies beyond the 75 C I value. Thus, 3 distinct orders have been observed in the exercise. The numbers of the points representing markets under these orders : are 136, third order, low; 96, second order, the middle; and 30, first order, the high order.

The hierarchical status of settlements has, generally, shown 5 orders and that the market hierarchy has been compared with the $K = 3$ system. But the case of RAMs is different from the periodic markets as in the latter case, there may be one, considerably big or first order point in the entire region under study, followed by $K = 3$ system. But in the case of RAMs, there can be no such one first order node. Since, the government has taken up the case of establishment of regulated markets, in the entire state, there would be some big markets, of course, but in a decentralized form, meaning thereby that the various sub-regions of the entire study region have such big nodes as per the government scheme. Thus, there may be several first order nodes and in the present case there are 30 first order RAMs in 14 divisions of U.P. — roughly two RAMs of the first order in each administrative division. These first order

markets are, of course, surrounded by the second, and the third order markets.

There are 30 first order RAMs, 96 second order, and 136 third order RAMs in the entire state. Also, there are 381 sub-yards, too, in the state. Thus, if these figures are taken into consideration the first order is, of course, not one very big node — rather there are multiple big nodes — as many as 30. But the second order are not twice but roughly 3 times, and third order although not thrice but nearly 2 times, and the number of smallest nodes i.e., the subyards, 381, is also nearly 3 times. And, further, if the periodic markets are also considered in this series, then again the next number would be around three times of 381. Thus, in a way, the $K = 3$ system does have some say in this respect too (of course not the full say which is also not possible excepting in the hypothetical cases).

Observations show that at the division level, the highest numbers of first, second, and third order markets are found in Kumaon (6), Meerut-Jhansi (12 each), and Meerut (22) respectively. These are 8 divisions which have just one first order market each, the Garhwal division has just one second order market. In case of the third order markets, the minimum number is that of 2 which is related to the Kumaon division.

The district level observations show that the 30 first order markets are located in 24 districts, 96 second order markets have their locations in 44 districts, while 136 third order markets find their locations in 54 districts. There are 9 districts — Nainital, Pilibhit, Almora, Kanpur Nagar, Sultanpur, Basti, Azamgarh, Pratapgarh, and Varanasi — which have no third order markets — although these are the lowest order markets as also in abundance. All the districts of four divisions — Meerut, Moradabad, Bareilly Allahabad — have the second order markets unlike other divisions. There are 10 districts — 6 hill districts — Uttarkashi, Tehri Garhwal, Pauri Garhwal,

Chamoli, Pithoragarh, Almora, and Kanpur Nagar, Basti, Azamgarh, and Pratapgarh which are just one market districts and hence only one order is found in each of these districts. Two market districts, 7 in number, obviously do not have all the 3 tiers of markets. Amongst the first order market districts, Nainital has 6 markets, Aligarh 2 and all the rest 22 district have just one each.

Bullandshahr, although has 11 markets, the highest number of markets in the entire state, yet it has no first order market as also it has only 2 second order markets too, and all the rest, 9, markets are of the third order. Nainital district has the second largest number of markets, 9, in the state. It has 6 first order and 3 second order markets. Thus, there are no third order markets in Nainital district. The districts of Saharanpur, Budaun, and Agra stand third in order of rank related to number of markets in a district as they have 8 markets each. Amongst these, Saharanpur has 6 third order and one each in first and second orders; Bullandshahr has four markets in third and 7 in second order, while Agra has 6 markets in third and 2 in second order. Thus, despite having the third largest number of markets in these districts, Agra and Budaun have no first order markets.

The major characteristic features of the first order RAMs are : The each C I value is above 75, on an average, the score on every parametre received by this is above 0.6 . Such a market has at least a new market site, two modern facilities, 5 or 6 ordinary sub-yards and/or 3 sub-yards with new sites, at least 5 times a week the market periodicity, more than 50,000 the market settlement population, more than 45 km per 100 km² the road-length, annual market fee collected by the market committee is more than Rs. 40,00,000, and 1,50,000 metric tonnes of average annual crop arrival at the market. Such markets, generally, are of A Special

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class under the UP Mandi Parishad classification. These market settlements are, generally, of urban agglomeration or municipal board status.

The major salient features of the second order markets are : The each C I value is above 50 (but not above 75). Each of the markets on an average has secured a score above 0.5 in every parameter. Such a market has at least one modern facility, more than 2 ordinary sub-yards/or one new site yard, more than twice the periodicity of the market, and at least 20,000 population. The road-length is more than 30 km per 100 km² area. Market fee per annum is collected between Rs. 20 - 40 lakhs. The volume of average annual crop arrival is more than 1,00,000 metric tonnes. About 1/3 of these markets have A class of the U.P. Mandi Parishad while the rest belong to B class — a few have C class too.

The third order markets are those which have secured less scores than the second order markets in case of every parameter in general.

8 TRADE AREA

The importance of the market is dependent upon producers and the consumers who in turn are dependent upon the space on which they live. Therefore, in the spatial context, the area of the space from where the inhabitants interacts with the particular point of focus or the market is known as the trade area of that particular market. The other words used in the same sense are influence area, catchment area, command area, service area, market area, and the hinterland.

The trade area, therefore, is also an important characteristic feature of a market. It also has an important say in determining the personality of the market — bigger the trade area of the market the higher the status of the market.

In general, the trade area is taken in terms of areal surface (e.g. km^2), but it can also be referred to the number of people as also the number of settlements too. A market serves a certain number of persons, who live in a certain number of settlements, which are located on a particular areal surface. Hence, the trade area can be expressed in three ways : In terms of number of persons, in terms of number of settlements — particularly villages, and in terms of the surface area.

The methodology adopted in the present case, however, is not an empirical one, rather the theoretical only for want of time and funds as the study area is the entire state of U.P. with all the 262 regulated agricultural markets. Simple formulations have been applied to find out the average trade area of markets at the district level in all the three contexts — area, population, and the number of villages. However, another exercise has also been made through measuring statistically the average space/population/number of villages served by a market in terms of standard deviation upto the extent of ± 3 . The trade areas of the first order RAMs have also been worked out but theoretically.

Under the present approach, five classes i.e. very small trade area, small trade area, medium trade area, large trade area, and very large trade area have been taken into consideration in all the three contexts — Area, population, and the number of villages. The findings of the study in this relation are as follows :

As regards the areal or spatial trade area i.e. trade area in terms of physical area, it has been observed that the largest number of markets have small trade areas. The 57.25 per cent of the RAMs have small trade areas, followed by the medium trade area class. On the other hand, there is no much difference between the rest three trade area classes as the very small trade area markets and

the very large trade area markets are in same number, and the large trade area markets are not much far off these numbers.

With regard to the trade area in terms of population, the observations show that the largest number of RAMs, 51.52 per cent, have the small trade area followed by the medium trade area markets which are less than half of the above again followed by the very small trade area class which again is about one-half of the medium class. The large trade area and the very large area classes almost have the same conditions which jointly are nearly equal to the number of markets under the very small trade area class. Thus, the predominating class under the present context is similar to the first context — the small trade area class.

In case of the trade area in the context of the number of villages, the results reveal that although the largest number of markets fall under the very small trade area class followed by the small trade area class, the difference between the two is just phenomenal, of only one market, hence it is rather negligible and it may be said that both the classes have nearly the same situation. The large trade area class is the smallest one in terms of markets followed by the very large trade area class. Both of these classes have very small number of markets.

Under the statistical approach, there used to be six classes like $\bar{X} + 1\sigma$ $\bar{X} - 3\sigma$. The general trade areas under all the three contexts have been statistically measured, the results of which are as follows:

In case of areal context, the class having the largest number of RAMs shows that the small trade area is the rule. More than 65 per cent markets fall under the $\bar{X} - 1\sigma$ class followed by the $\bar{X} - 2\sigma$ class which has 26 per cent RAMs. Thus, there are more than 90 per cent of RAMs which have the small/very small trade areas. The

percentages under the $\bar{X} + 1\sigma$, $\bar{X} + 2\sigma$ and $\bar{X} + 3\sigma$ classes are just 3.43, 1.53, and 3.43 respectively.

With regard to the population context, the largest and the very high percentage of RAMs, 85, have the $\bar{X} - 1\sigma$ class trade area. It is followed by the $\bar{X} + 1\sigma$ class trade area markets which have a percentage of 10.68. It makes crystal clear that the $\bar{X} - 1\sigma$ class predominates the series with no near runner as there is too much difference between the largest number of RAMs and the second largest number of RAMs, and their respective classes, when the one is $\bar{X} - 1\sigma$, the other one is $\bar{X} + 1\sigma$.

As far as it is related to the trade area on the basis of the number of inhabited villages, the statistical observations exposed that 69.08 per cent RAMs have fallen under the $\bar{X} - 2\sigma$ trade area class followed by the $\bar{X} - 1\sigma$ trade area class which has a value even below one-third of the former meaning thereby that there is a more pronounced difference between the two. Further, the $\bar{X} + 1\sigma$, $\bar{X} + 2\sigma$, and $\bar{X} + 3\sigma$ classes amongst themselves have only the negligible difference but if they join together, they have the value equal to just half of the $\bar{X} - 1\sigma$ trade area class. This all makes it clear that the difference is again the more pronounced one.

9 SPATIAL DESIGNS

Some scholars have used the term for marketing systems also but in the present case, its purpose is, rather different. Spatial distribution of points/nodes in any area represents some system. If the points are serially joined, the resultant form of the constellations of these emerge into some patterns. By and large, these systems/forms are near to some geometrical patterns. These geometrical patterns or systems or forms over an area are known as 'spatial designs'. Thus, the markets/points/nodes also have some system(s). It must be noted here that when periodic markets are joined or linked in

opening-day-sequence i.e. temporal order, such a special system is known as a market cycle/circuit rather than a system which is arranged not necessarily in temporal sequence and presents a spatial design. Thus, a market cycle may be a spatial design but the latter itself may not always be the former. The objective of the present treatise is to reveal such systems of regulated agricultural markets of U.P. as it has not been presented so far by any scholar.

The discussion is based on first order and second order RAMs as all the 262 RAMs could not be taken up simultaneously for various reasons. There are 30 first order RAMs, and 96 second order RAMs. The designs have been presented in these references only.

As far as it is related to the design formed by the first order RAMs, it has been observed that there are four types of spatial designs formed by these centres : triangular, rectangular, linear, and quin-sided.

The triangular pattern of first order RAMs has been found to exist in the hill region in which Haldwani, Kashipur, and Rudrapur markets are involved. It has also been located in western U.P. region in which Moradabad, Bareilly, Shahjahanpur, and Pilibhit RAMs are included. This design has also been discovered in the central U.P. region which is the resultant form of Kanpur, Lucknow and Sitapur RAMs.

The rectangular spatial design has been located in the hill region which takes into account the Haldwani, Rudrapur, Kichcha, and Khatima RAMs of the first order.

The linear design has been observed in western U.P. region which has come into being due to the serially located markets of Saharanpur, Muzaffarnagar, Meerut, Hapur, Aligarh, Hathras, Mathura, and Mainpuri.

A five sided figure has also been noted in the eastern U.P. region. It has come into existence due to the locations of Bahraich, Gorakhpur, Ballia, Varanasi, and Allahabad.

Thus, six cases of spatial design have been located by the scholar in the case of first order RAMs of U.P.

As far as it related to the second order RAMs, the only three different designs have been observed, although the number of cases are as many as 15 : six of the triangular designs, six of the rectangular, and three of the linear designs.

The triangular design has been noted in the hill region which is formed by the RAMs of Baraut, Khekra, and Mawana. In Moradabad district two sets of triangular designs have been observed with one common market — Sambhal. Amroha, Hasanpur and Sambhal make one triangular design while Sambhal, Bahjoi, and Chandausi make an another one. In Hardoi district, Hardoi, Madhoganj, and Sandila, form one triangular shape. The sixth triangular design is presented by Rath, Maudaha, and Charkhari RAMs of Hamirpur district.

There are six other cases of the rectangular design which are made by the second order RAMs of the state. Out of these, three cases are located in the western U.P. region. In Bijnor district, four markets — Najibabad, Kiratpur, Dhampur, and Chandpur make a rectangular shape. In Budaun district, four markets — Sahaswan, Bilsa, Ujhani, and Budaun — together give form to an other rectangle. In Aligarh district, Khair, Atrauli, Chhara, Sikandararau make one rectangle. The Farrukhabad district also has one rectangular design formed by the four second order RAMs of the district namely Farrukhabad, Kaimganj, Chhibramau, and Kannauj. The Bundellkhand region or the Jhansi division has two cases of rectangular designs. One from Jhansi district has come up due to serial locations of Chirgaon, Mauranipur, Gurusarai, and Month,

while the other one is located in Jalaun district and it has come up due to the locations of Orai, Jalaun, Konch, and Ait RAMs. The linear cases observed by the scholar in this context are those which are located in the central U.P. region. There are three such cases. The first one involves three RAMs of Etawah, Bharthana, and Auraiya. This linear pattern is somewhat like an angular pattern also. Another case has been noted in Kheri district, which consists the RAMs of Palian Kalan, Golagokarnnath, and Mohammadi. While the last one has been observed in Raebareli district involving the RAMs of Lalganj, Raebareli, and Jais.

Thus, in all 7 cases in context of the first order RAMs, and 15 cases in the context of second order RAMs have been observed by the scholar. This clearly reveals that there do exist some spatial designs or geometrical patterns or systems in an area with numerous nodes, and the same is true in this study too.

10 REGULATED AGRICULTURAL MARKET, LUCKNOW — A CASE STUDY

After presenting the major perspectives of the spatial analysis of the regulated agricultural markets of U.P., it seems proper and necessary too, to study at least one RAM from vicinity. Through this, various details come up which throw light on the real condition of these centres at the state level. To acquaint with the very real conditions under which an institution works, the detailed study is done as a case study. At this moment, the case of Lucknow RAM has been taken up for such a study.

The case has been selected just on the random basis as also due to the constraints of time and financial resources, besides the convenience too. The methodology adopted for the detailed study in this case involves the personal interview and survey schedule through which the primary data have been collected showing the

very real/true conditions prevailing in the RAM of Lucknow. Three types of survey schedules used are on (i) the market, (ii) the producer — the farmer — the seller, and (iii) the trader — the purchaser.

The RAM of Lucknow has been established in 1972. It is located on Sitapur road, the national highway number 24 in the trans-Gomti area of the city. The construction of the yard took place in 1978, and the mandi shifted from Daliganj to this yard, as also to one part of this yard, the fruit marketing of the city shifted in 1986. Lucknow is, primarily, a primary market but some secondary arrivals also are there from various other markets of the state and even outside the state too. The primary arrivals are paddy, rice, wheat, mango and arhar, while the secondary arrivals include the items like Apple, Banana, Orange, Gram, etc.

The market area consists of the area of 57 Nyaya Panchayats and Gram Sabhas under the five development blocks of the districts. The total land is 1,28,296 hectare of which only 45,883 hectare is under irrigation.

The market yard has the warehousing facility to the capacity of 1000 metric tonnes for grains while for seeds and fertilizer too there is an additional facility of 4500 metric tonnes in its market area. At the yard site, the centrally air-conditioned warehouse has the capacity of 1000 metric tonnes. The Kisan Bazar facility is also available besides the other facilities like the availability of moisture meter, weighing scale etc.

The market is well connected with its entire market notified area through metalled roads/link roads. The major villages from where the farmers bring their agricultural produce to this market are Itaunja, Bakshi Ka Talab, Kursi, Behta, and Mohammadabad. Mohammadabad is located as far as 55 km from Lucknow while all others are located within 25 km radius from Lucknow. There are four

sub-yards also attached with this market. These sub-yards are Malihabad, Kakori, Itaunja, and Mal.

There are three types of shops — A, B and C in the mandi. The yard has several platforms of 12 x 12 m size each for auction purpose. Main shops are also there for traders. The mandi has been categorised by the U.P. Mandi Parishad as of the A Special class. The annual market fee received by the committee at this market is to the tune of Rs. 3,00,00,000.

However, one surprising fact has come to the knowledge that outside the market yard, Mafia traders threaten the farmers for taking their produce to Pandeyganj, and Daliganj directly instead of bringing the same to the regulated agricultural market.

The farmers come from the notified area of which main villages are Kamlapur, Itaunja, Bakshi Ka Talab, Behta, Kursi Road, Mehmudabad. It has been observed that almost all the major Hindu castes as also some Muslims are engaged in farming. There are 28 per cent of the farmers from the upper Hindu castes. However, the backward castes have the highest percentage — as high as 40. The 24 percentage is shared by Muslims. Amongst the farmers, 4 per cent are illiterate while another 4 per cent have higher education too. The highest percentage i.e. 48 per cent is for those who have received education upto highschool/intermediate level. The farmers in bringing their produce to the yard, take upto two hours. There are 36 per cent farmers who take 1 to 2 hour time to reach the market. While 32 per cent farmers take more than two hours. Only 16 per cent farmers take less than one hour time to reach the mandi place. The most of the farmers, 72 per cent, come from a distance of 10 - 20 km. The farmers coming from less than 10 km distance have a percentage of 16 while those coming from more than 20 km distance, the percentage is 12. This makes quite clear that most of the farmers come from a distance within 20 km radius from the

mandi. Some farmers attend weekly markets too. The major weekly markets of this area are Itaunja (32 percent), Behta (24 pe cent), Bakshi Ka Talab (12 per cent), Mehmudabad (12 per cent), Kamlapur (8 per cent), Mohan (4 percent) and others (8 per cent). Most of the farmers have regular visits to the market during both the Rabi and Kharif seasons. However, during the Rabi season, the farmers have less number of visits for disposing their produce.

The farmers in general, have small land holdings. There are 32 per cent farmers who have 10 - 20 bighas of land holdings. Only 16 per cent of them have more than 20 bighas each while as many as 52 per cent of them have land holdings below 10 bighas each. However, most of the land under cultivation is irrigated. Thirty-six per cent of the farmers have 10 - 20 bighas of land under irrigation. Only 8 per cent of them have more than 20 bighas of irrigated land while as many as 56 per cent of the farmers have upto 10 bighas of land under irrigation. Amongst the farmers surveyed, all the 100 per cent of them had paddy and wheat as their main crops. Potato, pulses, and oilseeds are grown by 48 per cent, 44 per cent, and 4 per cent farmers respectively. It has also been noted that the marketed surplus of the farmers is quite low in comparison to their total produce. Yet, almost the entire surplus is sold at the RAM excepting a few cases.

The decision about the sale of produce of the farmers is generally based on the immediate needs of the family. Hence, the produce is sold generally, immediately after the harvest.

As far as it is related to traders some of the significant features have been noted as follows :

Most of them are from Daliganj, Khadra, and other localities which are located close to the mandi place. The traders come by rickshaw, tempo, or by their own vehicles to the market yard. It has been noted that 40 per cent of them have their own vehicles while another

40 per cent come by rickshaw. Thirty-five per cent of them come to the mandi from a distance of 2 km only while other 35 per cent come from a distance more than 5 km. Thus, 30 per cent of the traders come from a distance 2 - 5 km from the mandi. It is significant to note that the most of the traders, 60 per cent, are from the upper castes of Hindus, and only 25 per cent belong to the backward class. There were only 5 per cent schedule caste traders while the Muslim traders had a percentage of 10. The traders have no higher education and nor they are illiterate too. Forty-five per cent of them have received education upto eighth standard only while 55 per cent of the traders have high school or intermediate education.

The traders visit the yard regularly. Such traders are 95 per cent and all of them are from the vicinity only. This is equally true to both the Rabi and the Kharif seasons. Those who visit more frequently do more business than those who visit the market by less number of times. Most of them make business in wheat, paddy/rice besides pulses, oilseeds, and potato as per the season. Fruits are also sold-purchased at this mandi — mango, apple, and bannana predominating all the fruits.

11 PROBLEMS AND SUGGESTIONS

This chapter is centered on the analysis of the major problems as also the solutions to the same. It has been observed that the distribution of markets in the state has some anomalies. In view of the heavy population concentration as also the needs of the people, there are less numbers of RAMs, especially in, eastern part of U.P. On an average there are 18.71 RAMs per division while in case of Azamgarh, Gorakhpur, Allahabad, especially, the RAMs are only 10, 14, 11, and 11 respectively. The scholar has made vigorous efforts to select divisions, districts, and even the particular RAMs for the desired additions. On most reasonable grounds, only some additions have been suggested (rather than the large scale

additions). More particularly, six RAMs for Azamgarh, three for Gorakhpur, two for Allahabad, and two RAMs for Varanasi have been suggested as additions.

12 EPILOGUE

This chapter, the last one, presents the summary of the entire research work, under the the title EPILOGUE.